

Original Research Article

Various day care surgical procedures and their outcomes: A prospective study

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Abstract: Background: To study the outcome and safety of various day care surgeries in a tertiary care hospital, Jorhat.

Method: A prospective study was conducted on patients who underwent various day care surgeries at Jorhat Medical College & Hospital from August 2021 to July 2021. Patients between 18 to 65 years of age were included in the study. Patients underwent various surgeries and were discharged within 24 hours after surgery as day care surgery. Patients were followed on day 3, day 7 and day 30 for complication/readmission.

Results: 51 patients underwent day care surgeries. Among the 51 patients, 14 (27%) were males and 37 (73%) were females. Patients were between the age of 18- 65 years with a mean age of 36.75 years. All patients were discharged between 7 - 23 hours after surgery. Most patients (n=20, 39.2%) were discharged at 22 hours after surgery. Procedures done during the study period includes Laparoscopic Cholecystectomy (n=34, 66.6%), Excision (n=14, 27.4%), Circumcision (n=1, 1.9%), Hernioplasty (n=1, 1.9%) and diagnostic laparoscopy (n=1, 1.9%). During follow up at 3rd day, 7th day and 30th day, 3 presented with complications and 1 patient needed readmission. There was no mortality during the study period.

Conclusion: Day care surgery in a tertiary care hospital of Jorhat is safe with low complications and zero mortality rate in well selected patients.

Keywords: Laparoscopic; Surgical procedure; Hospital.

1. Introduction

The admission and discharge of a patient for a specific procedure within a 12-hour working day is known as "day care surgery" [1]. However, the definition differs from place to place. In USA, it is considered as the discharge of the patient from the hospital within 24 hours of surgery, which includes a 23-hour overnight stay [2-6]. According to Chinese Ambulatory Surgery Alliance, day care surgery is a planned surgery that excludes outpatient surgery, where the patient is discharged within 24 hours with an overnight stay [7,8]. Office surgery, outpatient operation/procedure (minor), and endoscopic procedure were excluded from day care [9].

Presently, India does day surgery on only 20% of all elective cases [10]. Day care surgery rates have increased in the USA from 20% in 1981 to 83.5% in 2006 [11,12]. The recent edition of the Directory of Procedures by the British Association of Day Surgery (BADS) has suggested a target day case rate of 75% [13].

The working population in a developing country like India, mostly comprise of daily wage workers who depend upon their daily in come for living [14]. A traditional surgical pathway in India includes admission for preoperative preparation, intraoperative, and postoperative monitoring period which need hospital admission for at least 3 to 4 days. The long duration of hospital stays leads to a loss of daily income for patients. This problem can be solved by day care surgery. Day care surgery is well known in private hospitals but not well known in patients among government hospitals with associated colleges.

A huge number of studies have been done on various day care surgical procedures all over India, but there is a lack of studies on the same in the northeast region of India. As a result, patients are unaware of day care surgery. A large number of inpatient beds are occupied by benign gall bladder diseases, appendicular pathology, benign breast disease, etc which can be managed on day care surgery basis. Day care surgery increases the turnover of these patients and helps with the availability of inpatient beds for patients with carcinoma and emergency admissions [10]. Spreading awareness about the benefits of day care surgery among the people of this region is important. Detailed research on day care surgery's safety and outcome is absent in northeast India.

2. Methods

This is a prospective study from August 2021 to July 2021 from a single tertiary care center in northeast India after obtaining approval from Institutional Ethical Committee. A total of 51 patients were analyzed during the study period.

2.1. Inclusion criteria

1. Patient age between 18 and 65 years,
2. ASA I and II,
3. Accompanied by one attendant, and
4. Operation time up to 2 hours.

2.2. Exclusion criteria

1. Patients age less than 18 years and more than 65 years
2. Patients with more than 24 hours of hospital stay after surgery
3. Operative time beyond 2 hours
4. Patients with serious co-morbidities (ASA 3 and ASA4), and
5. Patients does not want to participate

Consent for the procedure were taken from the patients. Pre-operative instruction was explained to the patients. Patients were instructed to be nil per oral (NPO) 6 hours for solid food. Carbohydrate drinks were given 2 hours prior to surgery. Hair removal of the concern site according to the site of plan surgery. Injection Ceftriaxone 1gm slow IV was administered after a test dose as prophylactic 30 minutes prior to incision.

Patient were operated under general anaesthesia or spinal anaesthesia or regional block. Patients underwent excision, circumcision, hernioplasty, diagnostic laparoscopic and laparoscopic cholecystectomy. After 4-6 hours, patients were evaluated. They were asked to take orally liquids, encouraged to sit up, go to toilets under supervision. Hemodynamic stability, able to ambulate and tolerate liquids orally, relieved from nausea and vomiting, adequate pain control, voided urine and no bleeding from surgical site were the discharge criteria. They were discharged before 24 hours after surgery after fulfilling the discharge criteria. They were followed up post operatively on 3rd, 7th and 30th day for complications and readmissions.

3. Results

A total of 51 patients were included in the study. Minimum age was 18 years and maximum age was 65 years. The mean age was 36.75 years. [Figure 1]

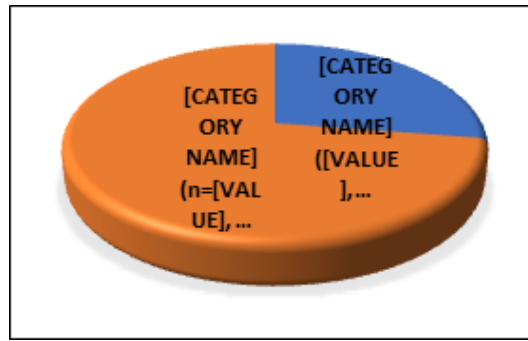


Figure 1. Distribution by gender

Table 1. Age group distribution of patients

Age group	Number of patients (n)
18 to 20	4 (7.84%)
21 to 30	12 (23.53%)
31 to 40	17 (33.33%)
41 to 50	9 (17.64%)
51 to 60	8 (15.68%)
61 to 65	1 (1.96%)

The patients were categorized according to American Society of Anaesthesiologist (ASA) score. 41 (80.4%) belongs to ASA I and 10 (19.6%) were ASA II. [Table 1]

Table 2. Distribution according to diagnosis

Disease	Number of patients (n)
Benign gall bladder disease	34 (66.66%)
Lipoma	3 (5.88%)
Sebaceous cyst	1 (1.96%)
Epididymal cyst	1 (1.96%)
Breast lump	7 (13.73%)
Phimosis	1 (1.96%)
Hemangioma	1 (1.96%)
Metastasis post op carcinoma colon	1 (1.96%)
Nerve sheath tumor	1 (1.96%)
Umbilical hernia	1 (1.96%)

Patients were operated under general anaesthesia (n=47, 92.15%), spinal anaesthesia (n=3, 5.89%) and regional anaesthesia (n=1, 1.96%). [Table 2]

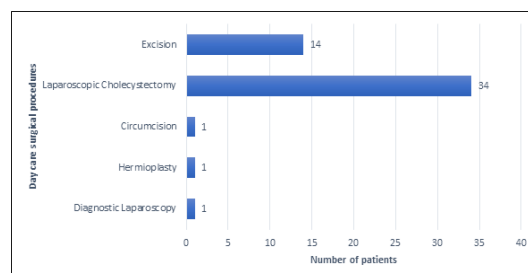


Figure 2. Distribution of patients according to procedures

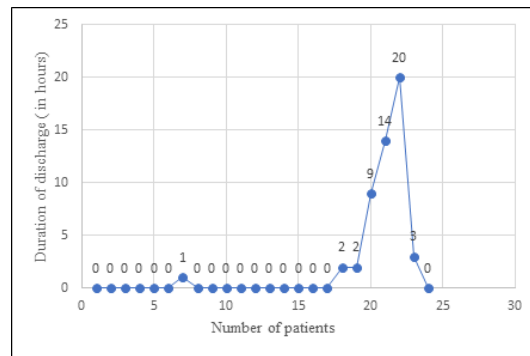


Figure 3. Frequency distribution of discharge time

Table 3. Number of complications and readmission during follow up

Follow up	Day 3 (n)	Day 7 (n)	Day 30 (n)
Complication	1 (1.96%)	2 (3.92%)	0 (0%)
Readmission	0 (0%)	1 (1.96%)	0 (0%)

[Table 3] On post operative follow up, 3 patients presented with superficial surgical site infection. 1 on 3rd day and 2 on 7th day follow up which were managed with antibiotic and antiseptic dressing in outpatient basis. 1 patient on 7th day presented with pain abdomen and was readmitted. The patient was managed conservatively. There was no complication or readmission on 30th day follow up. During the study period, there was no mortality.

4. Discussion

Day care surgery is an emerging convenient way of surgical treatment for both doctor and patient. It is economical, cost-effective, and also reduces hospital resource utilization. The safety and outcomes of various day care surgery was analyzed in this study by determining the postoperative complications and readmission rate on follow-up.

The majority of the patients were rejected because they fall under exclusion criteria like ASA 3 or more, above 65 or below 18 years of age, not willing to participate or hospital stay more than 24 hours. 51 patients were successfully discharged within 24 hours and were followed up. The percentage of elective day care surgery at Jorhat Medical College & Hospital was 4.3% during our study period.[Figure 2]

In our study, the mean age is 36.75 ± 12.74 SD whereas, in Lingaiah et al, it was 45 ± 4.5 SD [15].

Our study was conducted on patients with the age ranging from 18 - 65 years whereas Lingaiah et al, Bapat et al, Pato et al, and Kala et al conducted their study with an age ranging from 15 - 72 years, 15 - 70 years, 0.6 - 73 years and 0.6 - 70 years respectively [10,16,17]. Pato et al and Kala et al showed that day surgery can be done over a wide range of age groups including the pediatric and geriatric age groups with a low rate of complication [16,17].[Figure 3]

A Breast lump is one the commonest problem among females, presented in the outpatient department seeking treatment. Most of the small superficial fibroadenomas are treated as outpatient surgery/ minor procedures under local anaesthesia but deep-seated large fibroadenomas need surgical excision under general anaesthesia. The number of patients who underwent excision for breast lumps was 7 (13.3%) in our study. Our study has a higher percentage of breast lumps operated as day surgery compared to Lingaiah et al (n=5, 3.2%) and Pato et al's study (n=11, 3.2%) [15,16].

In our study, the number of laparoscopic cholecystectomies done as day care surgery was 34 (66.66%). Vaishnav et al, Lingaiah et al, and Pato et al did not perform a single day-care laparoscopic cholecystectomy [14,16,17]. The percentage of elective day care laparoscopic cholecystectomy out of total elective laparoscopic cholecystectomy done at JMCH in the study period is 15%. The percentage of day care laparoscopic cholecystectomy in Australia, Belgium, England, Germany, Italy, and the Netherland ranges from 0.5 - 2%. Whereas the percentage of day care laparoscopic cholecystectomy is high in the USA (49.8%) and Canada (43.9%) [12].

The mean length of hospital stay was 20.97 ± 1.82 (SD) hours in this study and ranges from 11- 23 hours which is similar to Lingaiah et al who demonstrated a hospital stay of 8.5- 23 hours with a mean length of stay of 20.5 ± 2.4 hours [16]. Pato et al also demonstrated similar findings with a range of hospital stays of 5- 23 hours [15].

In this study, the total number of surgical site infections was 3 (5.7%). In Lingaiah A et al, the total number of surgical site infections was 4 (2.4%), and in Vaishnav U et al, the total number of surgical site infections was 1(2%) showing a lower rate of surgical site infection [14,16]. The present study shows a readmission rate of 1.96% after day care surgeries. Lingaiah A et al showed a similar readmission rate of 0.6% for patients who underwent day surgery [16]. Vaishnav U et al showed a the readmission rate after day care surgery is 2% [14].

During the period of this study, there was no mortality. This study's findings are advocated by Vaishnav et al, Lingaiah et al and Pato et al. Vaishnav et al treated 47 patients who underwent day surgery and reported no mortality. Lingaiah et al conducted a similar study where 155 patients were operated on as day surgery and reported no mortality [16]. Pato et al also conducted a similar day surgery study on 350 patients and reported no mortality [15]. The techniques used and operations that are eligible for day surgery are associated with low morbidity and extremely low mortality rate (<1%) [12]. To make day surgeries more effective, this information should be made aware to patients or the patient's caregivers. The rate of day surgery in India is low compared to the west due to lack of awareness along the public about day care surgery. There is a need for an increase in awareness programmes about day care surgery among patients and health care providers in India to improve the rate of day care surgery.

5. Conclusion

Day care surgery is safe and associated with low complication rates in carefully selected patient even in tertiary care hospital of northeast India. There was zero mortality rate during the study period. Ethical approval: The study was approved by the Institutional Ethics Committee

Author Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflicts of Interest: "The authors declare that they do not have any competing interests."

References

- [1] Williams, N. S., O'Connell, P. R., & McCaskie, A. (Eds.). (2018). *Bailey & Love's short practice of surgery*. CRC Press.
- [2] CPOC. (2020). National Day Surgery Delivery Pack. Retrieved from https://www.cpoc.org.uk/sites/cpoc/files/documents/2020-%20Delivery%20Pack_Sept
- [3] Kulkarni, S., Harsoor, S. S., Chandrasekar, M., Bhaskar, S. B., Bapat, J., Ramdas, E. K., ... Swami, A. C. (2017). Consensus statement on anaesthesia for day care surgeries. *Indian Journal of Anaesthesia*, 61(2), 110.
- [4] Bailey, C. R., Ahuja, M., Bartholomew, K., Bew, S., Forbes, L., Lipp, A., ... Stocker, M. (2019). Guidelines for day-case surgery 2019: Guidelines from the Association of Anaesthetists and the British Association of Day Surgery. *Anaesthesia*, 74(6), 778-792.
- [5] Quemby, D. J., & Stocker, M. E. (2014). Day surgery development and practice: key factors for a successful pathway. *Continuing Education in Anaesthesia, Critical Care & Pain*, 14(6), 256-261.
- [6] Carlo, C., & Luigi, B. (2007). Policy Brief: Day Surgery: Making it Happen, recommendations from: International Association for Ambulatory Surgery, European Observatory on Health Systems and Policies & WHO.
- [7] Jiang, L., Houston, R., Li, C., Siddiqi, J., Ma, Q., Wei, S., & Ma, H. (2020). Day surgery program at West China Hospital: exploring the initial experience. *Cureus*, 12(7), 25-31.
- [8] Dong, Y., Li, J., Chang, J., Song, W., Wang, Y., Wang, Y., & Che, G. (2021). Video-assisted thoracoscopic day surgery for patients with pulmonary nodules: A single-center clinical experience of 200 cases. *Cancer Management and Research*, 13, 6169-6179.
- [9] Grobler, S., & Potgieter, A. (2009). Office-based surgery-why it is important. *Continuing Medical Education*, 27(9),6-12.
- [10] Bapat, R., Kantharia, C. V., Ranka, S., Bakshi, G., & Iyer, A. (2001). Day care surgery in a public hospital setup. *Bombay Hospital Journal*, 43(2), 249-252.
- [11] Philip, B. K. (2012). Day care surgery: the United States model of health care. *Ambulatory Surgery*, 17(4), 81-82.
- [12] Jarrett, P., & Staniszewski, A. (2006). The development of ambulatory surgery and future challenges. *The International Association for Ambulatory Surg (IAAS)*, 1, 21-56.
- [13] Bunting, D., & Russon, K. (2018). Day case laparoscopic cholecystectomy. *British Association of Day Surgery*, 5(3),32-36.

- [14] Vaishnav, U., & Patel, H. S. (2018). Evaluation of day care surgery in surgical department of a tertiary care hospital. *MedPulse International Journal of Surgery*, 5(3), 112-114.
- [15] Pota, A. Q., Wagho, N. A., & Soomro, A. H. (2013). Day case surgery: An experience at general hospital. *JLUMHS*, 12(01), 60-67.
- [16] Lingaiah, A., Venugopal, P., Mridula, K. R., & Bandaru, S. (2015). Types of various surgeries in Day Care: A study from South India. *Comité de Redacción*, 16, 115.
- [17] Kala, S. K., & Sharma, S. K. (2018). Day Care Surgery in Tertiary Level Hospital. *Int. J. Life Sci. Scienti. Res.*, 4(5), 1960-1968.



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